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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/628,427	07/28/2000	Tai-Her Yang	EM/YANG/5860	2978

7590 03/22/2002
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[REDACTED] EXAMINER

NGUYEN, TRAN N

[REDACTED] ART UNIT [REDACTED] PAPER NUMBER

2834

DATE MAILED: 03/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/628,427	YANG, TAI-HER
Examiner	Art Unit	
Tran N Nguyen	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM

THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 18-44 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
 5) Claim(s) ____ is/are allowed.
 6) Claim(s) 18-44 is/are rejected.
 7) Claim(s) ____ is/are objected to.
 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 11) The proposed drawing correction filed on 11 February 2002 is: a) approved b) disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) The translation of the foreign language provisional application has been received.
 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The corrected or substitute drawings were received on 2/11/02. These drawings are approved by the Examiner of the record.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, *the independently installed fan*, as in claim 20-21, *the car battery*, as in claim 41, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. **Claims 18-44** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 18, “thereby forming a closed circuit whereby said coolant is circulated” is indefinite because of the following:

(a) “a closed circuit” is unclear. Because the invention is related to an electric machine one might interpret “a closed circuit” to be an electrical closed circuit or an electromagnetic closed circuit;

(b) the term “whereby” in the phrase “*whereby said coolant is circulated*” is indefinite. It has been hold that the functional “whereby” statement does not define any structure and accordingly can not serve to distinguish. *In re Mason, 114 USPQ 127, 44 CCPA 937 (1957).*

In claims 18, 37, 38, “*said coolant*” (claims 18) or “the coolant” (claims 37-38) lacks antecedent basis. Claim 18, line 6, recites “*a closed coolant circulation structure*” not a coolant (i.e., a cooling substance which referred as coolant).

In claims 20-21, “*independently installed fan*” is indefinite because it is unclear what is the so-called independently installed fan? An independently installed fan can be a separate fan that is independently installed in the machine, e.g. a fan can be installed onto an output shaft of the machine independently from any other installing or assembling requirement of other parts in the machine. Alternately, an independently installed fan can be a separately formed fan, which is independently installed to the machine and is a non-related part with respect to any part of the machine.

In claim 24, “*at least said heat dissipation device are integral with casings of other peripheral mechanisms with cooling effects*” is indefinite because it is unclear what structural

or functional or operational relationship between the recited air cooler device of an enclosed electrical machine and the so-called “other peripheral mechanisms with cooling effects”.

In claim 26, “*tubular structures installed with exterior and interior cooling fins*” is indefinite because it is unclear whether each of the two structure having both exterior and interior cooling fins or the two structures respectively have exterior and interior cooling fins, if so which one have exterior cooling fins and which one has the interior cooling fins. In light of Spec, the two tubular structures respectively have exterior cooling fins and interior cooling fins.

In claim 35, “*said coolant circulation structure*”, and **claim 42** “*the coolant circulation structure*” each lacks antecedent basis. Claim 18, line 6, recites “*a closed coolant circulation structure*”. Furthermore, **in claim 35**, the phrase “*inlet and outlet pipes*” is indefinite because it is unclear whether there are separate inlet pipes and outlet pipes or inlet-and-outlet pipes, i.e., pipes that function as both inlet pipes and outlet pipes.

In claim 36, “*said rotational electric machine is a transmission mechanism and an outside of the casing formed an air chamber, and wherein several heat absorbing fins are installed at an inside of the air chamber....air chamber having a bend circuit shape*” is indefinite because of the following:

(a) “*said rotational electric machine*” lacks antecedent basis. Claim 18 recites “an enclosed electrical machine” which is read as either a rotational or a linear closed electrical machine;

In claim 38, “*an air cooler device, ..., wherein the coolant is gas other than air*” is indefinite because the recitation does not further set limitations for the independent claim, but rather broaden the limitation set forth thereof (i.e., the narrow range of limitation is “air”, as understood from the recited phrase “An air cooler device” being broadened by the recitation “the coolant is a gas other than air”.

In claim 40, “*heat dissipation device is arranged to heat a heating target*” is indefinite because it is unclear how a heat dissipation device enable to heat a heating target while heat dissipation device is known in the art for removing heat from a heat-generating target.

In claim 44, “*the outside of said distributing pipe*” is indefinite because both term “the outside” and “said distributing pipe” lack antecedent basis.

Other claims included in this rejection due to their dependencies.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. **Claims 18-19, 22-23, 25, 29-30, 32-34, 37, and 40**, as understood, are rejected under 35 U.S.C. 102(b) as being fully anticipated by **Carpenter** (US 4742257).

Carpenter discloses an air cooler for an enclosed electrical machine (fig 1-3) comprising: an enclosed electrical machine having a casing (11) having an inlet and an outlet; an air cooler device comprising: a heat dissipation having a plurality of cooling fins (33') located on an exterior of the closed coolant circulation structure, wherein the closed coolant circulation structure and the heat dissipation are integrally formed with the casing, wherein the casing having a cover (50); a closed coolant circulation structure (figs 1-3) having inner peripheral surface (12) with a plurality of cooling fins (33') forming with cover (5) to form inlet-outlet pipes acting as channel for connecting the heat dissipation with the inlet and the outlet; a fan (30) which is driven by the rotary machine's output shaft, and the fan is situated within the casing and arranged to circulate the coolant through the closed coolant circulation structure and through the inlet of the machine thereby forming a closed circuit of coolant circulation, wherein the heat dissipation device with cooling fins removing heat from heat generating stator and rotor of the machine.

4. **Claims 18-19, 22-23, 25, 32-34, 37, and 40**, as understood, are rejected under 35 U.S.C. 102(b) as being fully anticipated by **Onjanow** (US 3610975).

Onjanow discloses an air cooler for an enclosed electrical machine comprising: an enclosed electrical machine having a casing (10) having an inlet and an outlet; an air cooler device comprising: a heat dissipation having a plurality of cooling fins (24) located on an exterior of the closed coolant circulation structure (figs 1-2), wherein the closed coolant circulation structure and the heat dissipation are integrally formed with the casing (fig 1); a closed coolant circulation structure (figs 1-3) having inner peripheral surface (22) with a plurality of inlet-outlet pipes (23) that connect the heat dissipation with the inlet and the outlet; a fan (20, 34) which is driven by the rotary machine's output shaft, and the fan is situated within the casing and arranged to circulate the coolant through the closed coolant circulation structure and through inlet of the pipes (13) thereby forming a closed circuit of coolant circulation, wherein the heat dissipation device with cooling fins removing heat from heat generating stator and rotor of the machine.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. **Claims 20-21 and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Carpenter or Onjanow, as applied in the base claim, and further in view of level of ordinary skills of a worker in the art.

Carpenter or Onjanow discloses the claimed invention, each of the two refs disclose at least a fan for circulating the coolant therein. However, Neither the ref teaches a fan that is independently installed.

However, Those skilled in the art would realize that incorporating an independently installed fan is a matter of engineering design choice based upon the preference of the operation of the fan. In general, fans in a cooling device for an electrical machine are well known for their coolant circulating function. Those skilled in the art would know that an output-shaft-driven fan is obviously operated by the output power from the output shaft, while an independently installed fan is operated by another separate source of input power. Nevertheless, incorporating an independently installed fan alone or incorporating an independently installed fan with an output-shaft-driven fan would still serve the purpose of circulating coolant therein.

Thus, regarding claim 20, the Carpenter or Onjanow discloses the use of a fan in the machine, but the fan is installed on the output shaft instead of independently installed as recited in the claim. Those skilled in the art would realize that this is a matter of obvious engineering design choice to re-arrange the fan by independently installing a fan as a separate part.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to rearrange the fan in the cooler device for the electric

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machine so that the fan is independently installed. This is obvious because it has been held that rearranging parts of an invention involves only routine skill in the art. (*In re Japikse*, 86 USPQ 70.) And, one skilled in the art should have the necessary mechanical skill to make simple rearranging parts without an express teaching in a reference (*In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969)).

Regarding the additional independently installed fan, along with the an output-shaft-driven fan, as recited in claim 21, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include one more fan in the electric machine. The reason is it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. vs. Bemis Co.*, 193 USPQ 8.

Regarding the limitations that the removable closing means is a plug, as in claim 31, Carpenter disclose a removable cover (50) for permitting access to an interior of the closed coolant structure thereof. Those skilled in the art would realize that forming a closing means, as a plug is a matter of design choice. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include one more fan in the electric machine because a change in size or shape is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955) (emphasis added).

2. **Claims 24** is rejected under 35 U.S.C. 103(a) as being unpatentable **Carpenter or Onjanow**, as applied in the base claim, and further in view of **Barcus** (US 4244098).

Carpenter or Onjanow discloses the claimed invention, each of the two refs disclose the claimed invention, except for the added limitations of the heat dissipation device is an independent structure relative to the casing.

Barcus, however, teaches a heat dissipation device having a plurality of cooling fins formed as an independent structure relative to the casing (12). This would enable the heat dissipation to be formed separately from the casing and incorporate in the machine independently form the casing.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cooler device by configuring the heat dissipation device as an independent structure relative to the casing, as taught by Barcus. This would enable the heat dissipation to be formed separately from the casing and incorporate in the machine independently form the casing.

3. **Claims 26-27**, as understood, is rejected under 35 U.S.C. 103(a) as being unpatentable **Carpenter or Onjanow**, as applied in the base claim, and further in view of **Lordo et al** (US 4839547) or **Koyama et al** (JP 57-68640).

Carpenter or Onjanow discloses the claimed invention, each of the two refs discloses the claimed invention, except for the added limitations of the heat dissipation device and the closed coolant circulation structure comprising tubular structures installed with exterior and interior cooling fins.

Koyama, however, two tubular structures respectively have exterior cooling fins and interior cooling fins (figs 1-2) for enhancing the effect of cooling ventilation.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cooler device by configuring the heat dissipation device and the closed coolant circulation device as two tubular structures, wherein each of which respectively has one of exterior and interior cooling fins, taught by Koyama. Doing so would enhance the effect of cooling ventilation and heat dissipation.

Alternately, Lordo also teaches a tubular heat dissipation device that have both interior and exterior cooling fins, wherein the exterior cooling fins function as heat dissipating means while the interior cooling fins incorporating as fluid contacted heat exchange means. This would increase cooling and ventilation capacity.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cooler device by configuring the heat dissipation device and the closed coolant circulation device as tubular structure having both exterior and interior cooling fins, taught by Lordo. Doing so would increase the effect of cooling ventilation and heat dissipation.

4. **Claim 28** is rejected under 35 U.S.C. 103(a) as being unpatentable **Carpenter or Onjanow**, as applied in the base claim, and further in view of **Nakano** (US 6114784).

Carpenter or Onjanow discloses the claimed invention; each of the two refs discloses the claimed invention, except for the added limitations of the closed coolant circulation having a filter installed therein.

Nakano, however, teaches a motor with cooling structure having air filters (70, 171) are installed at the openings (41w, 50w) respectively so that cooling air is supplied to an inner space

of the motor housing through the air filters. The arrangement of the air filters prevents dust including iron powder from entering into the motor housing 41, so as not to attach iron powder to the permanent magnets 37 and 38 of the motor.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cooler device by providing filter therein, as taught by Nakano. Doing so would prevent dust including iron powder from entering into the motor.

5. **Claim 36**, as understood, is rejected under 35 U.S.C. 103(a) as being unpatentable **Carpenter**, as applied in the base claim, and further in view of **Hasegawa et al (US 4814653)**.

Carpenter or Onjanow discloses the claimed invention, each of the two refs particularly discloses a rotational electric motor which is understood as a transmission mechanism, i.e., since the rotational electric machine provide mechanical output power which may be used as rotational torque those skilled in the art would realize that broadly the disclosed rotational electric motor is read as a transmission mechanism. Carpenter discloses the claimed invention, except for the added limitations of an outside of the casing forms an air chamber having cooling fins.

Hasegawa, however, teaches an air cooler device for a machine comprising a casing (30) wherein an air chamber (40) with cooling fins (32) formed inside the chamber (40). The chamber (40) serves as a communication flow for the inlet and outlet coolant.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cooler device by providing an air chamber, with cooling fins,

formed outside of the casing, as taught by Hasegawa. Doing so would provide communication airflow between the inlet and the outlet coolant.

6. **Claims 35, 39 and 42,** as understood, is rejected under 35 U.S.C. 103(a) as being unpatentable **Carpenter or Onjanow**, as applied in the base claim, and further in view of **Hayashi (US 5770899)**.

Carpenter or Onjanow discloses the claimed invention, each of the two refs discloses the claimed invention, except for the added limitations of the inlet and outlet pipes, and the heat distribution is a liquid cooler device with control valve.

Hayashi, however, teaches a heat dissipation structure as a liquid cooling device. As shown in FIG. 3, the fluid (F) flowing from the inlet pipe (24) into an inlet of the tube-like container (36) of the electric machine main body (31) flows through the passage (40) of the cooling mechanism. Then, the fluid flows through the outlet pipe (25) of (FIG. 3) connected to an outlet of the tube-like container (36) of the cooling mechanism and returns again to the reservoir tank (20). The pipes 21, 24, 25 are provided with valves (not shown) such as stop valves and control valves, and the flow of the fluid is controlled by those valves. The fluid cooler device provide means to reduce thermal heat in the electric machine

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cooler device by configuring the heat dissipation device as a liquid cooler device having inlet and outlet pipes controlled by valve, as taught by Hayashi. Doing so would provide means to restrain the temperature rise due to generation of heat in the electric machine.

7. **Claims 38, 41 and 43** are rejected under 35 U.S.C. 103(a) as being unpatentable **Carpenter (or Onjanow)** and **Hayashi**, as applied in the base claim, and further in view of **Borinski** (US 3725705).

Carpenter (or Onjanow) in combination with Hayashi disclose the claimed invention, except for the added limitations of the valve is operated based on input from a temperature sensor installed on the heating target.

Borinski, however, teaches a cooling device having a temperature sensor (82) is housed in chamber (12), where heat target is located, and the sensor is in operative relationship with pumps (79, 24) and valves (25, 80). Once a suitable temperature has been reached in chamber, sensor (82) will provide input to energize pump (24) to withdraw the helium gas from the chamber and shut down the valves (25, 80). As notice, Borinski teaches the use of helium as a coolant gas other than air. Borinski discloses a different heating target, however, car battery is a well known heating target in a vehicle.

Those skilled in the art would realize that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this instant case, the Borinski's important teaching is the use of sensor to provide input for operating and/or controlling the valve based on the input for the temperature sensor.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cooler device by providing temperature sensor to control the valve, as taught by Borinski. Doing so would provide means to detect the temperature of the heat-generating element in order to enable the valve to operate promptly to turn on or turn off the pipes that deliver coolant.

8. **Claim 44** is rejected under 35 U.S.C. 103(a) as being unpatentable **Carpenter or Onjanow**, as applied in the base claim, and further in view of **Uchida** (US 6078115).

Carpenter or Onjanow discloses the claimed invention; each of the two refs discloses the claimed invention, except for the added limitations of the additional air guiding pipes to provide heat-exchanged output to an additional heat target.

Uchida, however, teaches an air-cooled motor having additional air guiding pipes (8, 12-13, 43) to provide heat-exchanged output to an additional heat target.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cooler device by configuring the air guiding pipes, as taught by Uchida. Doing so would provide means to direct the coolant air for enhancing cooling effect of the cooler device.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

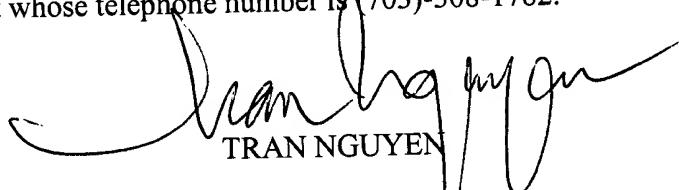
MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tran N Nguyen whose telephone number is (703) 308-1639. The examiner can normally be reached on M-F 6:00AM-2:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703)-308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3431 for regular communications and (703)-395-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-1782.



TRAN NGUYEN
PRIMARY PATENT EXAMINER

TC-2800